CLAIMS

1. A method for sorting and recovering fine particles
that are responsive to optical pressure, the method comprising
5   emitting a laser beam to a flow path of a gas or liquid
containing fine particles that are responsive to optical pressure
and a component or components that are irresponsive to optical
pressure, in such a manner that the laser beam crosses the flow
direction of the gas or liquid, to selectively deflect the
10   direction of movement of only the fine particles that are
responsive to optical pressure, in the direction of convergence
of the laser beam, thereby sorting the fine particles from the
component or components that are irresponsive to optical pressure,
and recovering the fine particles.
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2. The method according to claim 1, wherein the fine
particles are selected from the group consisting of organic or
inorganic polymeric materials, metals, cells, microorganisms and
biopolymers, all of which are responsive to optical pressure.
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3. A method for sorting and recovering target fine
particles, comprising irradiating with a laser beam the target
fine particles, which are responsive to optical pressure, in a
flow path of a gas or liquid containing fine particles that are
25   responsive to optical pressure and a component or components that
are irresponsive to optical pressure, in such a manner that the
laser beam crosses the flow direction of the gas or liquid, to
selectively deflect the direction of movement of only the target
fine particles in the direction of convergence of the laser beam,
30   thereby sorting the target fine particles from other fine
particles and the component or components that are irresponsive
to optical pressure, and recovering the target fine particles.

4. The method according to claim 3, wherein the flow
35   path is a flow path of a liquid.

5. The method according to claim 3, wherein the target fine particles are selected from the group consisting of organic or inorganic polymeric materials, metals, cells, microorganisms and biopolymers, all of which are responsive to optical pressure.

6. The method according to claim 3, wherein the target fine particles are cells or microorganisms.

7. A flow cytometry process in which the method according to claim 6 is used for sorting target cells.

8. An apparatus for recovering fine particles, comprising:

a collector for collecting fine particles that are responsive to optical pressure;

a laser beam emitter; and

a flow path for flowing a gas or liquid containing fine particles that are responsive to optical pressure and a component or components that are irresponsive to optical pressure, the flow path being disposed between the collector and the laser beam emitter;

the collector having at least one chamber disposed so that the opening faces the flow path;

the laser beam emitter having at least one emitting aperture; and

the apparatus being configured so as to emit a laser beam from the emitting aperture toward the opening of the chamber of the collector in such a manner that the laser beam crosses the flow path and converges behind the opening.

9. The apparatus according to claim 8, wherein the opening of the chamber of the collector and the emitting aperture of the laser beam emitter face each other, with the flow path interposing therebetween.

10. The apparatus according to claim 8, wherein the laser beam emitter has at least two emitting apertures, and wherein the collector has chambers corresponding in number to the emitting apertures.

11. The apparatus according to claim 8, further comprising detection and analysis portions for detecting and analyzing fine particles in the gas and liquid passing through the flow path.

12. The apparatus according to claim 11, wherein the detection and analysis portions are linked to the laser beam emitter, so that the target fine particles are selected based on data obtained in the detection and analysis portions, and so that only the selected target fine particles are irradiated with the laser beam.

13. A cell sorter comprising the apparatus according to claim 8 as a sorting portion.